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HAIR STYLING IRON

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[There are no amendments to this patent.]

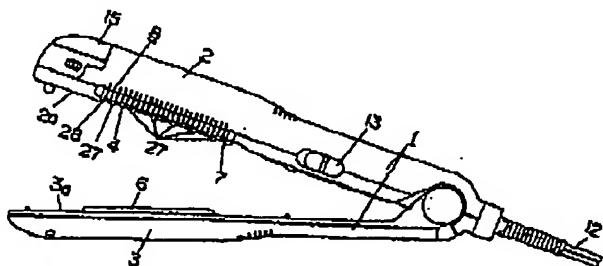
### Abstract

#### Problem

To provide a hair styling iron that can straighten hair from the roots to the middle and curl hair from the middle to the tips.

#### Means to solve

In a hair styling iron in which heating plate block (2) and pressing plate block (3) are connected to be able to open and close, heating plate (4) is placed on the surface (2a) of heating plate block (2) that faces pressing plate block (3), heating means (5) that heats heating plate (4) is built into heating plate block (2), pressing plate (6) is placed on the surface (3a) of pressing plate block (3) that faces heating plate block (2), and which curls hair by gripping hair between heating plate (4) and pressing plate (6), a second heating plate (7) is furnished at least on the side surface adjacent to surface (2a) of heating plate block (2) that faces pressing plate block (3) or on the side surface adjacent to surface (3a) of pressing plate block (3) that faces heating plate block (2).



Key: 2 Heating plate block

- 2a Facing surface
- 3 Pressing plate block
- 3a Facing surface
- 4 Heating plate
- 6 Pressing plate
- 7 Second heating plate
- 8 Guard

Claims

1. Hair styling iron characterized in that, in a hair styling iron in which a heating plate block and a pressing plate block are connected to be able to open and close, a heating plate is placed on the surface of the heating plate block facing the pressing plate block, a heating means that heats the heating plate is built into the heating plate block, a pressing plate is placed on the surface of the pressing plate block facing the heating plate block, and hair is curled by gripping the hair between the heating plate and the pressing plate, a second heating plate is provided at least on the side surface adjacent to the surface of the heating plate block that faces the pressing plate block or on the side surface adjacent to the surface of the pressing plate block that faces the heating plate block.

2. Hair styling iron described in Claim 1, characterized in that the second heating plate heating means is the same as the heating means of the aforementioned heating plate.

3. Hair styling iron described in Claims 1 and 2, characterized in that a guard is furnished on the surface of the second heating plate that projects from the surface of the second heating plate.

4. Hair styling iron described in Claims 1-3, characterized in that a friction member with a coefficient of friction larger than that of the surface of the second heating plate and of the surface of the main unit is furnished at least on the side surface adjacent to the surface of the heating plate block that faces the pressing plate block or on the side surface adjacent to the surface of the pressing plate block that faces the heating plate block.

5. Hair styling iron described in Claims 1-4, characterized in that a series of ribs, oriented in the direction in which hair passes through, is furnished between the aforementioned heating plate and the second heating plate.

6. Hair styling iron described in Claim 5, characterized in that the series of ribs is formed so that they extend beyond the second heating plate.

Detailed explanation of the invention

[0001]

**Technical field of the invention**

This invention pertains to a hair styling iron for styling hair.

[0002]

Conventional hair styling irons are constructed equipped with a heating plate block that has a heating plate and a heating means that heats it, and a pressing plate block that has a pressing plate for gripping the hair between it and the heating plate. Hair is gripped between the heating plate and the pressing plate, and when the hair is styled, it is straightened from the roots of the hair to the tips.

[0003]

**Problems to be solved by the invention**

This invention was devised the aforementioned points into consideration taking. Its purpose is to provide a hair styling iron that can straighten hair from the roots to the middle and curl hair from the middle to the tips.

[0004]

**Means to solve the problems**

Therefore, this invention is characterized in that, in a hair styling iron in which heating plate block (2) and pressing plate block (3) are connected to be able to open and close, heating plate (4) is placed on the surface (2a) of heating plate block (2) that faces pressing plate block (3), heating means (5) that heats heating plate (4) is built into heating plate block (2), pressing plate (6) is placed on the surface (3a) of pressing plate block (3) that faces heating plate block (2), and which styles hair by gripping hair between heating plate (4) and pressing plate (6), a second heating plate (7) is provided at least on the side surface adjacent to the surface (2a) of heating plate block (2) that faces pressing plate block (3) or on the side surface adjacent to the surface (3a) of pressing plate block (3) that faces heating plate block (2).

[0005]

With the aforementioned invention, when the hair is styled, the hair is gripped between heating plate (4) and pressing plate (6) from the roots of the hair to the middle and the hair can be straightened by sliding the iron straight forward. In addition, for the tips of the hair, rotating main unit (1) around the long axis of main unit (1), with the hair held between heating plate (4)

and pressing plate (6), allows the hair to touch second heating plate (7) so that it can be heated and curled.

[0006]

This invention is also characterized in that the heating means for second heating plate (7) can be the same as heating means (5) for aforementioned heating plate (4).

[0007]

With the aforementioned invention, a single heating means can be used, and main unit (1) can at the same time be made more compact.

[0008]

This invention is also characterized in that a guard (8) can be furnished on the surface of second heating plate (7) that projects from the surface of the second heating plate (7).

[0009]

With the aforementioned invention, when second heating plate (7) is in use, it can be prevented from touching the skin, and the risk of burns can be prevented.

[0010]

This invention is also characterized in that friction member (9) with a coefficient of friction larger than that of the surface of second heating plate (7) and of the surface of main unit (1) can be provided at least on the side surface adjacent to surface (2a) of heating plate block (2) that faces pressing plate block (3) or on the side surface adjacent to surface (3a) of pressing plate block (3) that faces heating plate block (2).

[0011]

With the aforementioned invention, when main unit (1) is rotated around the long axis of main unit (1), with the hair gripped between heating plate (4) and pressing plate (6), the hair can easily be brought into contact with second heating plate (7), and tension is easily applied to the hair.

[0012]

This invention is also characterized in that a series of ribs (10), oriented in the direction in which the hair passes through, can be provided between heating plate (4) and second heating plate (7).

[0013]

With the aforementioned invention, hair will not get caught when the hair passes between heating plate (4) and second heating plate (7), and the direction of the hair can be regulated. The durability of ribs (10) is increased by forming ribs (10) in a series.

[0014]

This invention is also characterized in that the series of ribs (10) can be formed so that they extend beyond second heating plate (7).

[0015]

With the aforementioned invention, ribs (10) double as a guard (8) for preventing contact between the surface of second heating plate (7) and the skin.

[0016]

#### Embodiment of this invention

An example of an embodiment of this invention is explained below, based on Figures 1 through 30.

[0017]

The hair styling iron is composed with heating plate block (2) and pressing plate block (3) connected at one end to be able to open and close, as shown in Figures 1 through 5. Heating plate (4) is placed on surface (2a) of heating plate block (2) that faces pressing plate block (3), heating means (5) that heats heating plate (4) is built into heating plate block (2), and pressing plate (6) is placed on surface (3a) of pressing plate block (3) that faces heating plate block (2). Bristles (27) are also placed at both outside edges of heating plate (4).

[0018]

Heating plate block (2) and pressing plate block (3) are energized by coil spring (11) at the end where heating plate block (2) and pressing plate block (3) are connected together to be able to open and close. Normally they are open as shown in Figure 1. When force is applied in the direction for closing pressing plate block (3) and hair is gripped, they enter the state shown in Figure 3. Here, (12) in the figures is a power cord for supplying power, (13) is a switch for controlling current flow to the heater block, and (14) is a light-emitting indicator for indicating that current is on.

## [0019]

Heater block (17) is housed inside heating plate block (2) as heating means (5) for heating plate (4). Heater block (17) functions to heat heating plate (4) and also to heat water, supplied from water tank (15) mounted at the tip of heating plate block (2), to generate steam. Heater block (17), as shown in Figures 6 and 7, is formed with electrode plates (19) placed on both sides of PTC heater (18) and alumina plates (20) additionally placed on both sides of that, and these are housed inside heater pipe (21). Multiple projecting bars (22) that run axially are furnished spaced circumferentially on the outer surface of heater tube (20). When heater block (17) is housed in the cylindrical portion of iron tube (23), the outer surfaces of aforementioned projecting bars (22) will touch the surface around the inner circumference of the cylindrical portion of iron tube (23).

## [0020]

Water tank (15) is detachable from heating plate block (2). Water-absorbent member (16), such as felt, that contacts the water put into water tank (15), is placed at the tip of the portion of water tank (15) that is attached to heating plate block (2), and this touches the forward end surface (26) of heater block (17), as shown in Figures 6 and 7. Then, when current is supplied to heater block (17) and heater block (17) is heated, if water tank (15) with water in it is attached, steam is generated by the heating and evaporation of water held by water-absorbent member (16). Said steam is discharged outside of heating plate block (2) through steam holes (24) furnished in surface (2a) of heating plate block (2) that faces pressing plate block (3).

## [0021]

Second heating plate (7) is placed in a lengthwise orientation along heating plate block (2) on the side surface adjacent of surface (2a) of heating plate block (2) that faces pressing plate block (3). By placing second heating plate (7) in this way, when hair is styled, the hair is gripped between heating plate (4) and pressing plate (5) from the roots of the hair to the middle as shown in Figure 9 (Figure 9 (a)), and the hair can be straightened by sliding [the iron] straight toward the tips of the hair (Figure 9 (b)). Additionally, for the hair tips, main unit (1) can be rotated around the long axis of main unit (1) with the hair gripped between heating plate (4) and pressing plate (6) so that the hair touches second heating plate (7) and is heated and can be curled. Here, Figure 9 (c) shows a case in which the tips of the hair are curled outward as in Figure 9 (e) by curving the tips of the hair outward with the hair gripped between heating plate (4) and pressing plate (6). Figure 9 (d) shows a case in which the tips of the hair are curled inward as in Figure 9 (f) by curving the tips inward with the hair gripped between heating plate (4) and pressing plate (6).

[0022]

Second heating plate (7) can also be furnished on the side surface adjacent to surface (3a) of pressing plate block (3) that faces heating plate block (2), as shown in Figures 10 and 11, or it could also be furnished on both the side surface adjacent to surface (2a) of heating plate block (2) that faces pressing plate block (3) and on the side surface adjacent to surface (3a) of pressing plate block (3) that faces heating plate block (2), as shown in Figures 12 and 13.

[0023]

Also, in this example, the heating means for second heating plate (7) is the same as heating means (5) for heating plate (4), as shown in Figure 5. By using one heating means for heating plate (4) and second heating plate (7) in this way, main unit (1) can be made more compact.

[0024]

Also, in this example, second heating means (30) that heats pressing plate (6) is furnished for pressing plate block (3), as shown in Figures 6 and 8. Second heating means (30) is constituted with electrode plates (32) placed on both sides of PTC heater (31) and with alumina plate (33) further placed between it and pressing plate (6), as shown in Figures 6 and 8. Because second heating means (30) that heats pressing plate (6) is furnished in this way, hair can be gripped between heating plate (4) and pressing plate (6) and heated from both sides, so the hair can be curled more effectively.

[0025]

Also, as shown in Figures 1, 2, and 5, guard (8) is formed on the surface of the second heating plate (7) with projecting lines (28), which project from the surface of second heating plate (7), placed across the long direction of heating plate block (2). The width of projecting lines (28) may be about 1 mm, and the spacing between projecting lines (28) about 3-5 mm. By furnishing guard (8) on the surface of second heating plate (7) in this way, second heating plate (7) can be prevented from touching the skin during use, and the risk of burns can be prevented. Here, when second heating plate (7) is placed on the side surface adjacent to surface (3a) of pressing plate block (3) that faces heating plate block (2), as shown in Figures 10 and 11, guard (8) is placed on the surface of second heating plate (7). When second heating plates (7) are placed both on the side surface adjacent to surface (2a) of heating plate block (2), that faces pressing plate block (3), and on the side surface adjacent to surface (3a) of pressing plate block (3) that faces heating plate block (2), a guard is placed on the surface of both of the second

heating plates (7) as shown in Figures 12 and 13. Guard (8) could also be formed by placing projecting parts (29) along the heating plate block (2), as shown in Figures 14 and 15.

[0026]

A friction member (9) with a coefficient of friction larger than that of the surface of second heating plate (7) and of the surface of main unit (1) may also be furnished on the side surface adjacent to surface (2a) of heating plate block (2) that faces pressing plate block (3), as shown in Figures 16 and 17. In this way, when main unit (1) is rotated around the long axis of main unit (1) with hair gripped between heating plate (4) and pressing plate (6), the hair can easily touch second heating plate (7) and tension can easily be applied to the hair. Here, it is desirable that friction member (9), as shown in Figure 17, be furnished outside of second heating plate (7). Also, when second heating plate (7) is placed on the side surface adjacent to surface (3a) of pressing plate block (3) that faces heating plate block (2), as shown in Figures 18 and 19, friction member (9) may be placed outside of second heating plate (7). When second heating plates (7) are placed both on the side surface adjacent to surface (2a) of heating plate block (2) facing heating plate block (3) and the side surface adjacent to surface (3a) of pressing plate block (3) that faces heating plate block (2), as shown in Figures 20 and 21, friction members (9) may be placed outside of the second heating plates (7).

[0027]

A series of ribs (10) may also be furnished in the direction in which hair passes between heating plate (4) and second heating plate (7), as shown in Figures 22 and 23. By forming ribs (10) in a series in this way, the hair will not get caught and the direction of the hair can be regulated when hair passes between heating plate (4) and second heating plate (7). The durability of the ribs is also increased by forming ribs (10) in a series.

[0028]

Furthermore, by forming the series of ribs (10) so that they extend beyond second heating plate (7), as shown in Figures 24 and 25, they can also double as a guard that prevents contact between the surface of second heating plate (7) and the skin.

[0029]

Steam holes (24) through which steam is discharged and heating plate (4) should be formed separately, as shown in Figures 26 and 27. If steam holes (24) and heating plate (4) are formed integrally, the temperature of heating plate (4) is affected by steam generation, and it will be difficult to maintain heating plate (4) at a high temperature. But the temperature of heating

plate (4) can be set easily by forming steam holes (24) and heating plate (4) to be separate. And if heating plate (4), placed on both sides of steam holes (24), is formed integrally, one heating means is sufficient.

[0030]

Water-absorbent member (31) could also be furnished on at least one side of heating plate (4), as shown in Figure 28. In this way, moisture can be supplied to the hair by sliding the hair over water-absorbent member (31). Also, because steam generation is not used as the means for supplying moisture to the hair, heating plate (4) will not be affected by steam generation, and the temperature of heating plate (4) can be set easily. Water-absorbent member (31) is also detachable, and water-absorbent material (31) is placed only on the side where the hair will pass before it touches heating plate (4), and is not attached on the other side. In this way, the hair can be styled with the procedure in which it is heated via the absorbed water, and styled hair that will stay styled is obtained, without supplying water to the hair after styling.

[0031]

Normally, pressing plate block (3) is open, as shown in Figures 29 and 30. In this case, water tank (15) is energized by coil spring (32)<sup>\*</sup>, so water-absorbent member (16) in water tank (15) does not touch heater block (17), which is the heating means (5). If water tank (15) is pressed in against coil spring (11) [sic; (32)], water-absorbent member (16) in water tank (15) touches heater block (17), which is the heating means (5), and steam is generated. In this way, heating plate (4) is normally not affected by the generation of steam and its temperature can be set easily. Also, the tip part (33) of pressing plate block (3) automatically presses water tank (15) by opening and closing pressing plate block (3) as shown in Figures 29 and 30, so it is not necessary to press in water tank (15) on purpose.

[0032]

Effects of the invention

For the invention described in Claim 1 of this invention, in a hair styling iron in which the heating plate block and the pressing plate block are connected to be able to open and close, a heating plate is placed on the surface of the heating plate block facing the pressing plate block, a heating means that heats the heating plate is built into the heating plate block, the pressing plate is placed on the surface of the pressing plate block facing the heating plate block, and hair is styled by gripping the hair between the heating plate and the pressing plate, a second heating

\* [Editor's note: This spring does not appear to be labeled in the figures. The number (32) was previously used to label electrode plates shown in Figures 6 and 8.]

means is provided at least on the side surface adjacent to the surface of the heating plate block that faces the pressing plate block or the side surface adjacent to the surface of the pressing plate block that faces the heating plate block. Thus, when hair is styled, the hair is gripped between the heating plate and the pressing plate from the roots of the hair to the middle and the hair can be straightened by sliding the iron straight forward. In addition, for the hair tips, rotating the main unit around the long axis of the main unit, with the hair gripped between the heating plate and the pressing plate, allows the hair to touch the second heating plate so that it can be heated and curled.

[0033]

For the invention described in Claim 2, in addition to the effects of the invention described in Claim 1, the heating means for the second heating plate is the same as the heating means for the aforementioned heating plate. Thus, one heating means can be used, and the main unit can be made more compact.

[0034]

For the invention described in Claim 3, in addition to the effects of the inventions described in Claims 1 and 2, a guard that projects from the surface of the second heating plate is furnished on the surface of the second heating plate. Thus, when the second heating plate is in use, it can be prevented from touching the skin, and the risk of burns can be prevented.

[0035]

For the invention described in Claim 4, in addition to the effects of the invention described in Claims 1 through 3, a friction member with a coefficient of friction larger than that of the surface of the second heating plate and of the surface of the main unit is provided at least on the side surface adjacent to the surface of the heating plate block that faces the pressing plate block or the side surface adjacent to the surface of the pressing plate block that faces the heating plate block. Thus, when the main unit is rotated around the long axis of the main unit with hair gripped between the heating plate and the pressing plate, the hair can easily be brought into contact with the second heating plate, and tension can easily be applied to the hair.

[0036]

For the invention described in Claim 5, in addition to the effects of the inventions described in Claims 1 through 4, a series of ribs, oriented in the direction in which the hair passes through, is furnished between the heating plate and the second heating plate. Thus, when the hair passes between the first heating plate and the second heating plate, the hair will not get caught

and the movement of the hair can be regulated. Also, the durability of the ribs is increased because they are formed in a series.

[0037]

For the invention described in Claim 6, in addition to the effects of the invention described in Claim 5, the series of ribs is formed so that they extend beyond the second heating plate. Thus, the ribs can double as a guard that prevents contact between the second heating plate and the skin.

Brief description of the figures

- Figure 1 is a side view of one example of an embodiment of this invention.
- Figure 2 is a top view of the above.
- Figure 3 is a side view of the above with the pressing plate block closed.
- Figure 4 is a longitudinal cross section of the above.
- Figure 5 is a lateral cross section of the above.
- Figure 6 is an enlarged longitudinal cross section of the above.
- Figure 7 is an enlarged longitudinal cross section of the heating means of the above.
- Figure 8 is an enlarged longitudinal cross section of the second heating means of the above.
- Figures 9(a), (b), (c), (d), (e), and (f) are diagrams explaining the use of the above.
- Figure 10 is a side view of another example of an embodiment of this invention.
- Figure 11 is a lateral cross section of the above.
- Figure 12 is a side view of another example of an embodiment of this invention.
- Figure 13 is a lateral cross section of the above.
- Figure 14 is a side view of another example of an embodiment of this invention.
- Figure 15 is a lateral cross section of the above.
- Figure 16 is a side view of another example of an embodiment of this invention.
- Figure 17 is a lateral cross section of the above.
- Figure 18 is a side view of another example of an embodiment of this invention.
- Figure 19 is a lateral cross section of the above.
- Figure 20 is a side view of another example of an embodiment of this invention.
- Figure 21 is a lateral cross section of the above.
- Figure 22 is a side view of another example of an embodiment of this invention.
- Figure 23 is a lateral cross section of the above.
- Figure 24 is a side view of another example of an embodiment of this invention.
- Figure 25 is a lateral cross section of the above.

Figure 26 is a schematic oblique view of another example of an embodiment of this invention.

Figure 27 is a lateral cross section of the above.

Figure 28 is a schematic oblique view of another example of an embodiment of this invention.

Figure 29 is a longitudinal cross section of another example of an embodiment of this invention with the pressing plate opened.

Figure 30 is a longitudinal cross section of the above with the pressing plate closed.

#### Explanation of symbols

- 2 Heating plate block
- 2a Facing surface
- 3 Pressing plate block
- 3a Facing surface
- 4 Heating plate
- 5 Heating means
- 6 Pressing plate
- 7 Second heating plate
- 8 Guard
- 9 Friction member
- 10 Rib

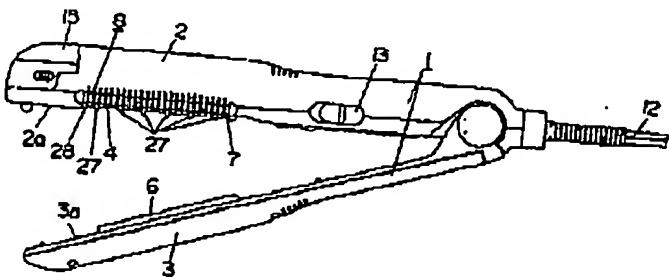


Figure 1

- Key:
- 2 Heating plate block
  - 2a Facing surface
  - 3 Pressing plate block

14

- 3a Facing surface
- 4 Heating plate
- 6 Pressing plate
- 7 Second heating plate
- 8 Guard

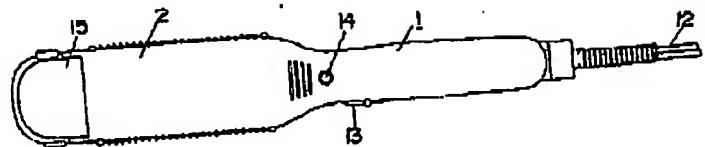


Figure 2

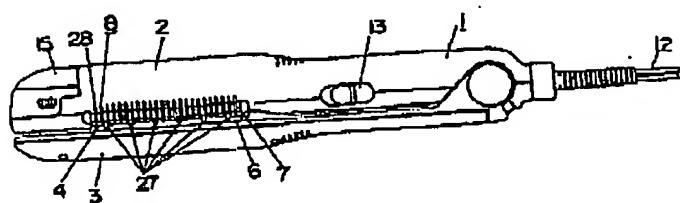


Figure 3

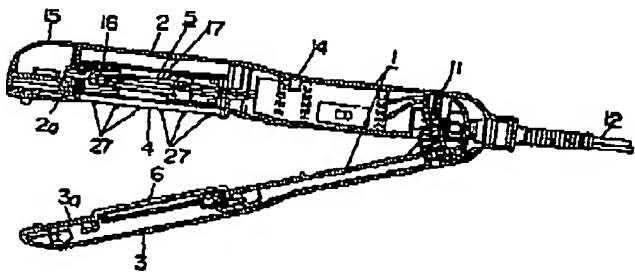


Figure 4

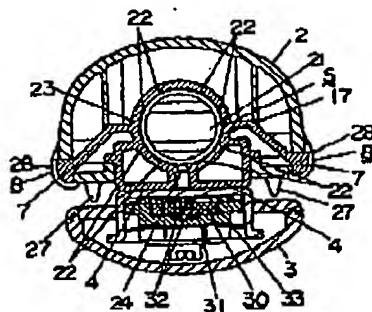


Figure 5

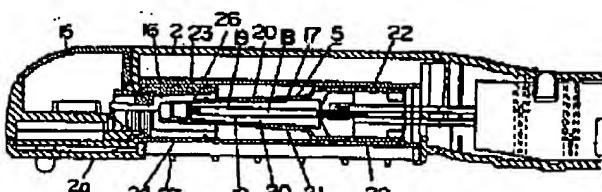


Figure 6

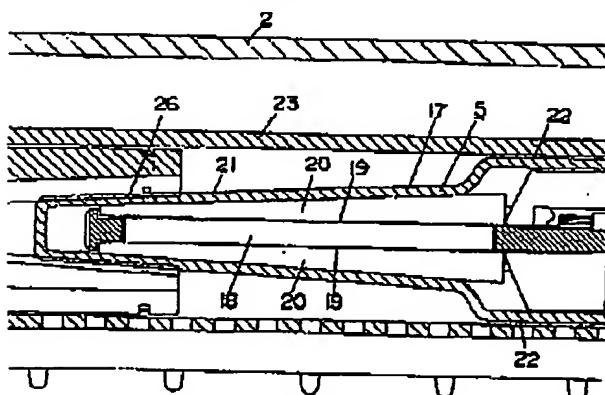


Figure 7

16

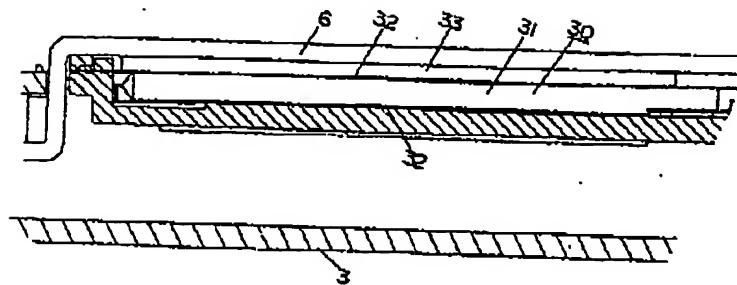


Figure 8

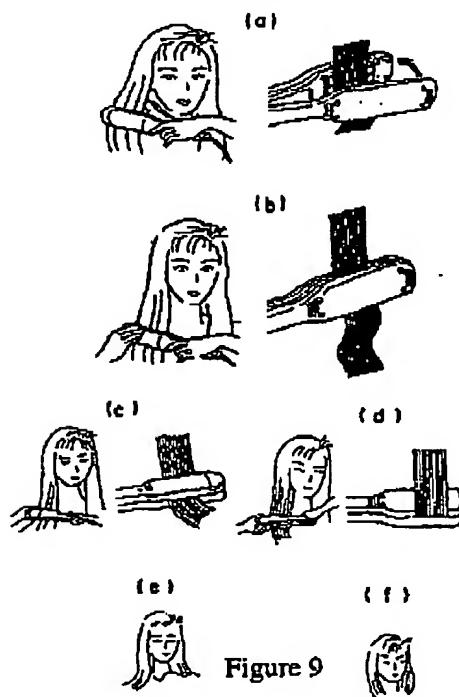


Figure 9

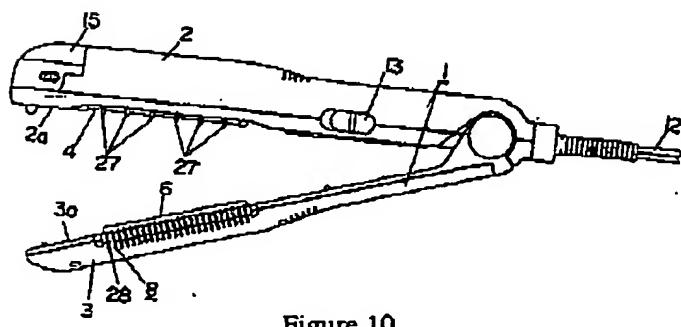


Figure 10

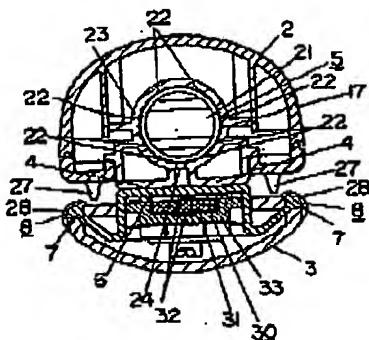
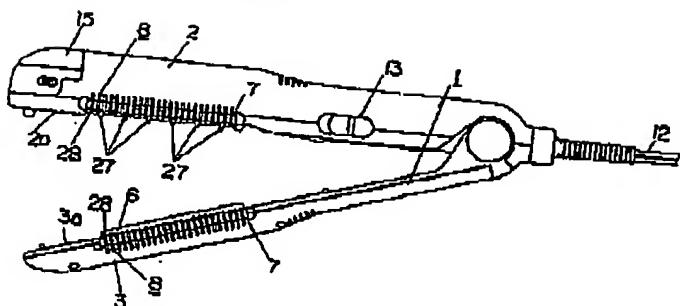
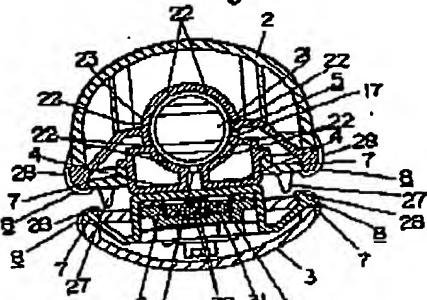


Figure 11



**Figure 12**



**Figure 13**

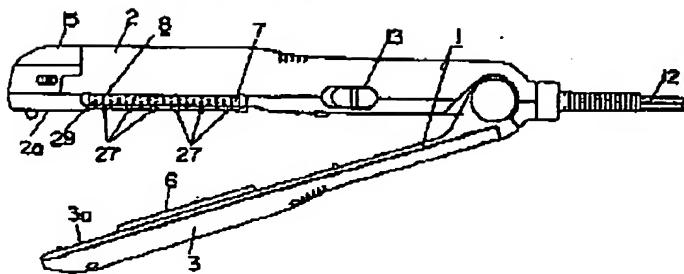
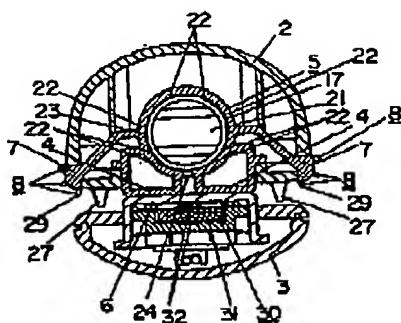
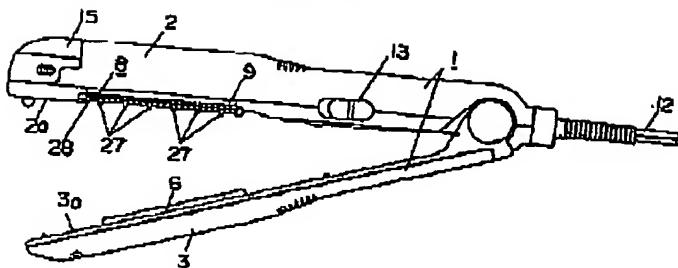


Figure 14

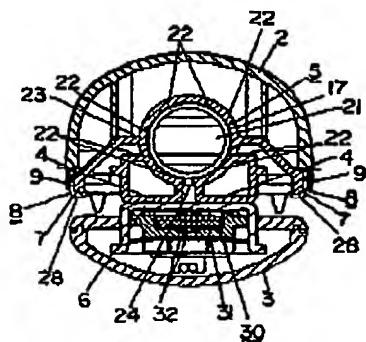
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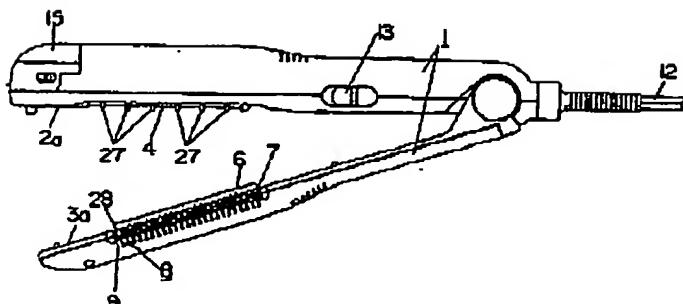
**Figure 15**



**Figure 16**

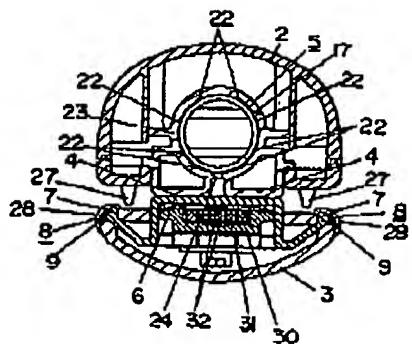


**Figure 17**

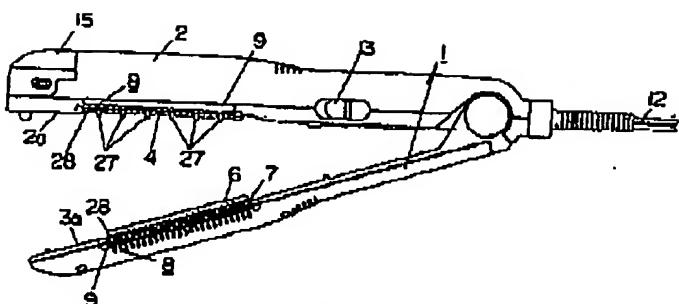


**Figure 18**

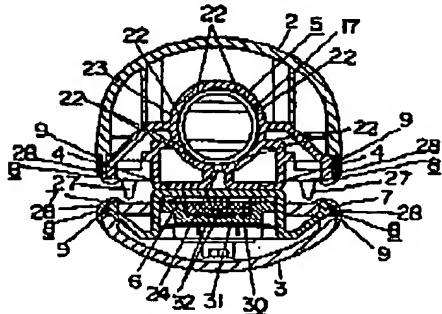
19



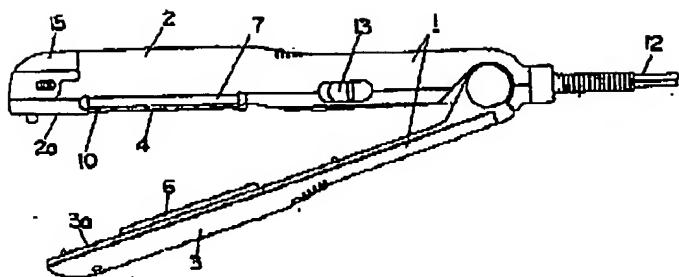
**Figure 19**



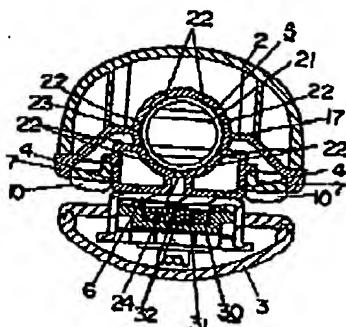
**Figure 20**



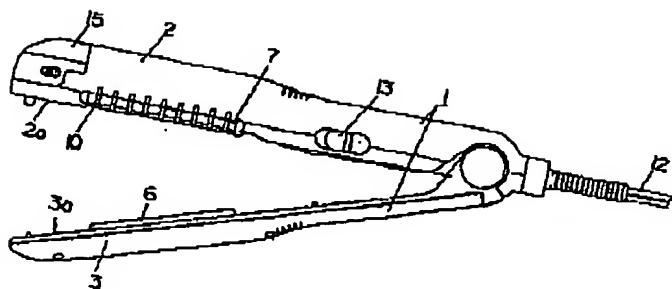
**Figure 21**



**Figure 22**



**Figure 23**



**Figure 24**

21

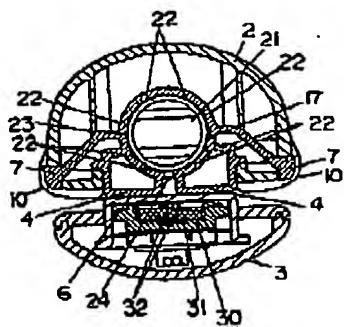


Figure 25

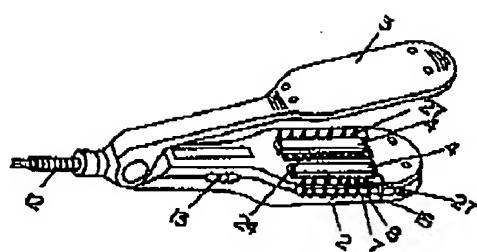


Figure 26

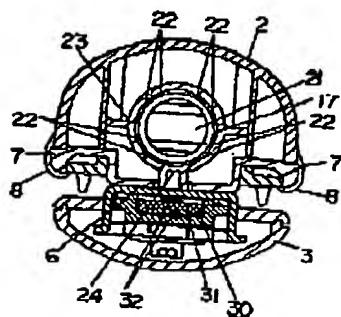


Figure 27

22

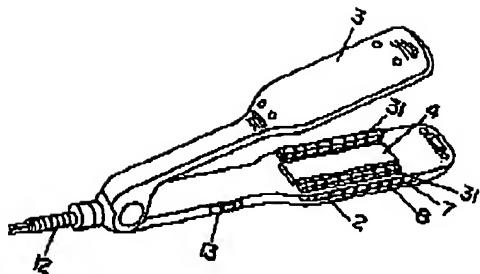


Figure 28

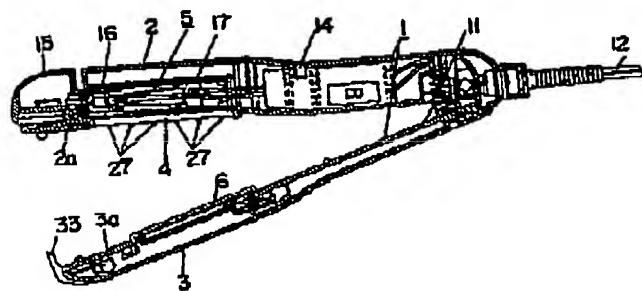


Figure 29

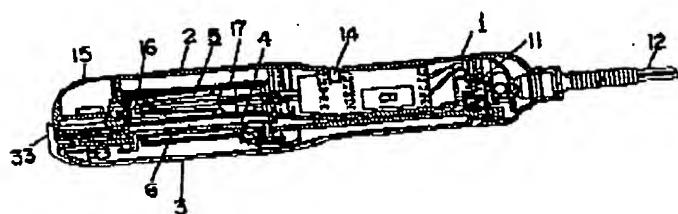


Figure 30